



HM820 Design seam machine

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<i>Subject:</i>	Instruction manual	

Word in advance

Thank you for choosing a Habraken Machines special product.
This machine was specially designed and constructed to fulfil customer requirements.

Please read this manual before operating this machine.
Contact our support team for any inquiries or questions you might have regarding this machine.

About this manual.

This manual uses the following typography and symbols:

Standard text...

Notes, tips and hints...

Syntax, parameters and reference to information on user interfaces such as displays...

These symbols can be found on the machine and in this manual:



Read the manual.



Attention.



Wear eye protection.



Warning.



Warning; Clamp injury.



Warning; Electricity.



Warning; Laser light.

Support.

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Please keep this manual for future reference!



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1 Introduction

The HM820 is a development of Habraken-Machines for stitching a wide range of decorative seams. It is based either on an M-type DA-867 twin-needle, flat-bed, triple transport or an M-type DA-868, twin-needle, post-bed triple transport sewing head.

- **Revolutionary concept**

The HM820 is based on a revolutionary “rotating needlebar” concept developed by Habraken-Machines. Because of this concept, high-speed and precise needlebar rotation is achieved.

- **State-of-the-art technology**

Utilising state-of-the-art technology, the HM820 is offering a wide range of decorative stitch patterns.

- **Intuitive technology**

Combining all benefits of the DA-867 M-type flat-bed triple transport machine with the latest user-friendly technology, the HM820 is offering a low learning curve.

2 Description

The HM820 is based on either a DA867 flat-bed or DA-868 sewing head.

The sewing head is driven by an EFKA DA321 control unit in combination with an EFKA DC1550 motor.

By design, operation and functionality of the EFKA DA321 is respected as much as possible. This resulting in a “standard machine” in case the rotating needle bar is switched off.

Control of the rotating needle bar, selection of decorative seams, options and safety in relation to this decorative stitching is done by the so called Decorative Stitching Control Unit. This unit consists of a Nais FP0-R plc in combination with a touch screen.

2.1 Overview

- 1) EFKA DA321 control box
- 2) Main switch
- 3) DA867 m-type sewing head
- 4) Decorative Stitching Control Unit
- 5) Sewing control pedal;
- 6) Efka sewing motor control panel;
- 7) Thread stand
- 8) Stand
- 9) Drawer.
- 10) Lamp
- 11) Power supply lamp + switch



2.2 Controls

At sewing head:

- 1) Intermediate backack
- 2) Needle up/down
- 3) Center guide
- 4) Stitchlength
- 5) Tension release
- 6) Not used



Efka V820 control panel.



Decorative Stitching Control Unit



2.3 Pneumatic parts

- 1) Valve Backtack (RA)
- 2) Valve Stitchlength (STL)
- 3) Valve Shortstitch (STL FA)
- 4) Buffer
- 5) Pressure sensor (PA)
- 6) Valve center guide



3 Safety



Operation of the machine is restricted to authorized personnel only. Operators and maintenance staff have to be familiar with Dürkopp Adler 867 or 868 sewing machine and Efka control units. Individual manuals of the DA 868, Da 868 and the Efka DA321 are integral part of the documentation of the HM820.



Read this and related manuals careful and keep it for future reference!

Detailed information on the DA 867 and Da 868 can be found in the operation instructions and service manual.

General information on the Efka DA321G5321 can be found in the DA321 instruction manual and parameter list.



Habraken Machines recommend to wear eye protection when operating the machine.



Habraken Machines recommend to wear ear protection when operating the machine.



Caution Risk of Injury !

When repairing, converting or doing maintenance work turn off the main switch and disconnect the machine from the pneumatic supply.

Adjustments and function testing on the running machine are to be conducted only by strictest adherence to all safety measures and extreme caution.



4 Decorative stitching control unit

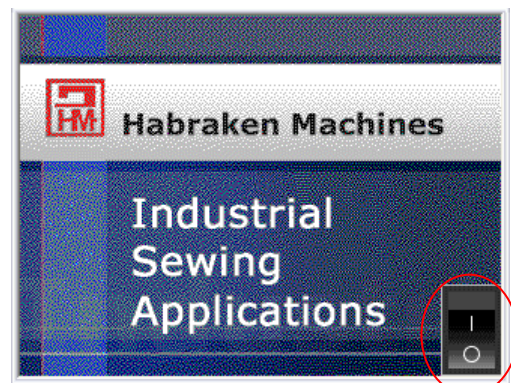
Decorative stitching is fully controlled by the so called Decorative Stitching Control Unit. All settings and selections related to decorative stitching are done here. In this chapter you will find a description off the user interface.

4.1 Power up

- Power on (Efka main switch)
- The display on the Decorative Stitching Control Unit will show the message “Now booting up”

4.2 Main Screen

- After completion of the boot-sequence, the “main screen” will be displayed.
- At this stage, decorative stitching isn’t activated yet and the machine could be operated as a standard twin-needle DA867 or DA868.
- To activate decorative stitching, press the “zero / one “ button on the lower right corner.




Main screen

4.3 Configuration Screen

Pressing the “zero / one “ button in the main screen opens the configuration screen.

The configuration screen offers four selections:

- Pressing the  logo will open the “Setup Screen”.
- Selection of either a 1 or 2 needle set. Pressing the “Change?” button will toggle between the two options either showing “1 Needle Set” or “2 Needle Set” on the display.
- Press the “zero / one” button to exit the Configuration Screen and return back to the main screen.
- Continue to decorative stitch selection. Pressing the “Continue?” button will open the “Decorative Stitch Selection” screen.



Configuration screen



During configuration, the machine is blocked.



Always check correct threading before pressing continue



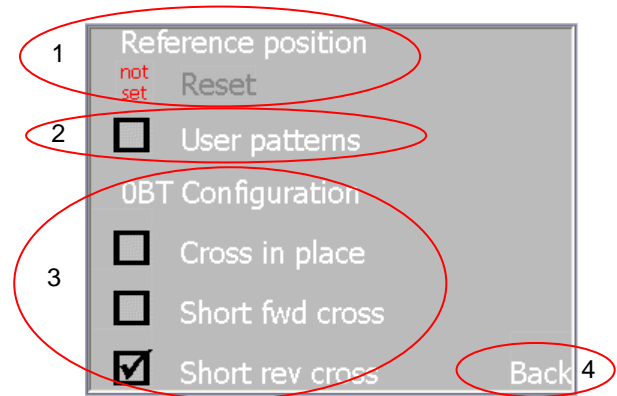
4.4 Setup Screen

The Setup Screen offers the possibility to:

1. Set the "Reference Position"
2. Active the "User Patterns" option
3. Select the 0-backtack type
4. Exit the screen with the "Back" button



During setup the machine is blocked.



Setup screen

4.4.1 Reference position

The reference position is used to determine all relevant positions related to needle bar rotation and transport.

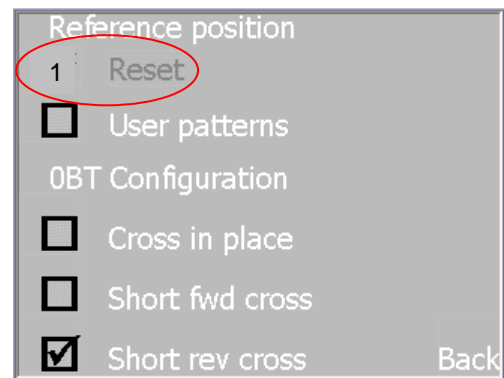
After power up, two stitches are needed for the control to determine the exact position. In case the machine hasn't been in operation for at least two stitches after power up, the text "not set" is displayed. The reference position will set automatically within 2 stitches.

Only in rare cases (e.g.: new plc soft- or hardware) the reference position has to be set.

If you are not sure about the correct setting of the reference position, follow the steps indicated in & 4.5.1.1 Checking the reference position

4.4.1.1 Checking the reference position

- Turn the hand wheel in forward direction until the current sector is indicated by a value 1 upto 20,
- Continue turning the hand wheel until the arrow on the left-hand side of the wheel levels with the 60° indication on the wheel.
- In this position, the reference position should show the value "1"
- If a different value is displayed follow the steps indicated in & 4.5.1.2 Setting the reference position



Setup screen



4.4.1.2 Setting the reference position

- Turn the machine for 2 stitches in sewing direction.
- Continue turning the hand wheel until the arrow on the left-hand side of the wheel levels with the 60° indication on the wheel.
- Press “Reset” on the display
- The value “1” will overwrite the current setting..



4.4.2 User Patterns

Standard the HM820 offers a total of 16 different decorative stitching patterns. The HM820 also offers the possibility to upload custom patterns. To access these patterns, the option “User Patterns” has to be activated.

Note: This topic will be explained in more detail in & 4.7

4.4.3 0 (zero) backtack configuration

On top of the standard Efka backtack, the HM820 offers three types of so called 0 backtack options:

- **Cross in place** : The total number of backtack stitches, set in the Efka control, will be performed in cross-stitch and at the same position
- **Short fwd cross**: The total number of backtack stitches, set in the Efka control, will be performed solely in a forward direction and the short stitchlength activated. (cross-stitch)
- **Short rev cross**: The total number of backtack stitches, set in the Efka control, will be performed solely in a backward direction and the short stitchlength activated. (cross stitch)

Note: Press the “Back” button in the setup Screen to exit and turn back to the Main Screen

4.5 Decorative stitch selection screen

- This screen offers a selection out of 16 patterns. Standard 16 factory patterns are displayed. In case the option “user patterns” is selected, only numbers will be displayed on the buttons.
- Selection is made by pressing the desired stitch symbol.
- The selected patter is immediately activated
- On the top left corner, the selected needle set is displayed. (2-needle)

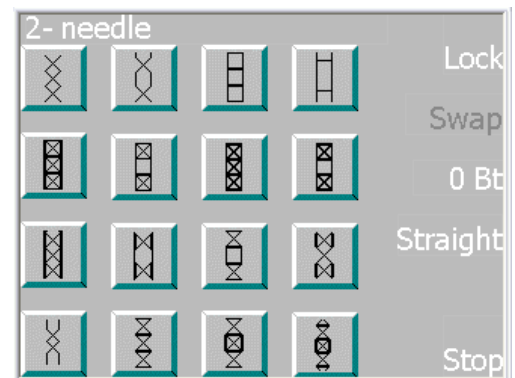


4.5.1 Factory patterns

Default 16 factory designed patterns are offered. Switching between patterns is just a matter of pressing on the symbol of the desired pattern.

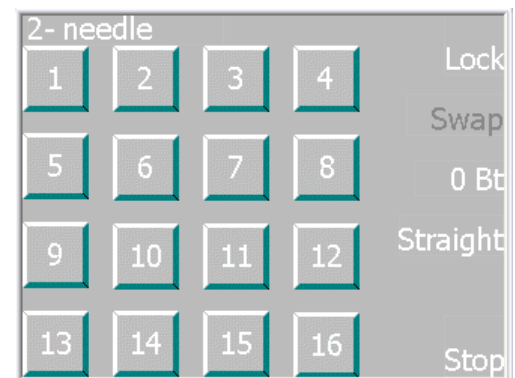


It is possible to select patterns while sewing



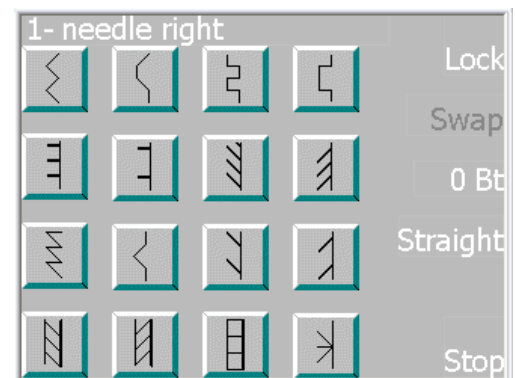
4.5.2 User patterns

In case "user patterns" is selected, only numbers will be displayed.



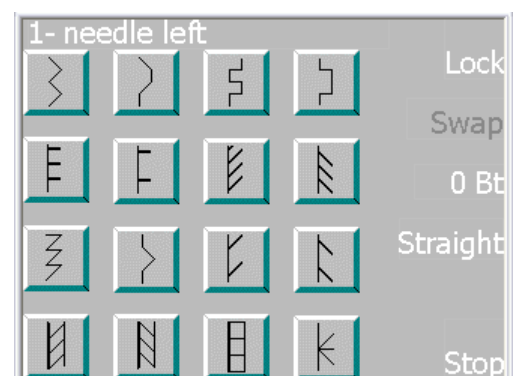
4.5.3 1-needle right

Related to the selected needle set (2-needle, 1-needle right, 1 - needle left), the appropriate patterns are displayed on the selection buttons.



4.5.4 1-needle left

Related to the selected needle set (2-needle, 1-needle right, 1 - needle left), the appropriate patterns are displayed on the selection buttons



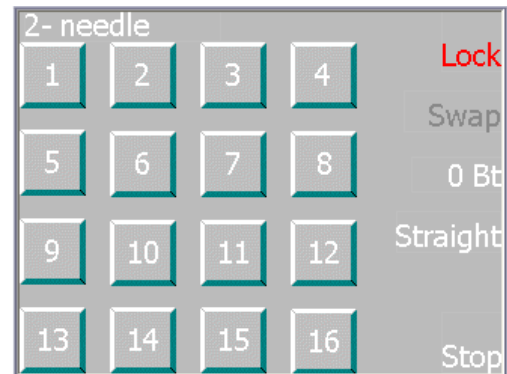
4.5.5 Machine Lock function

In case the “Lock” button is pressed, the machine will be locked. This allowing the operator applying adjustments like threading to the machine without the danger of activating the machine by accident.



The text STOP with the motor run-blockage symbol will be displayed on the V820 display.

Pressing “Lock” again will set the machine to operation mode again.

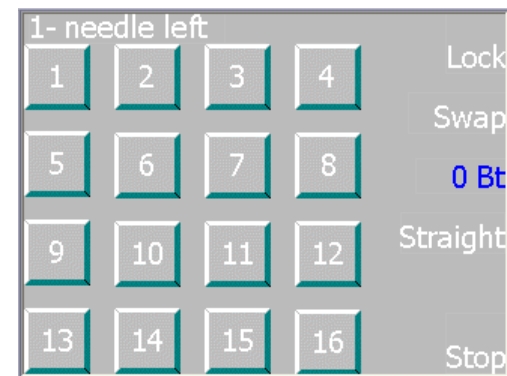


4.5.6 Turning the needle manually

For threading and replacement of needles, it sometimes is needed to turn (swap) the needle set. Pressing the “Swap” button the needle set will be turned. To avoid damage, this function is only activated in a safe position to do.

To swap the needle set:

- Turn the handwheel until the “Swap” button is displayed in white text (safe position)
- Press the “Swap” button.



Occasionally the needle position might be wrong for the task at hand (start of a new seam, threading). It is possible to rotate the needle bar by pressing “Swap”.

Note: Activating Swap more then once can be done without any harm.

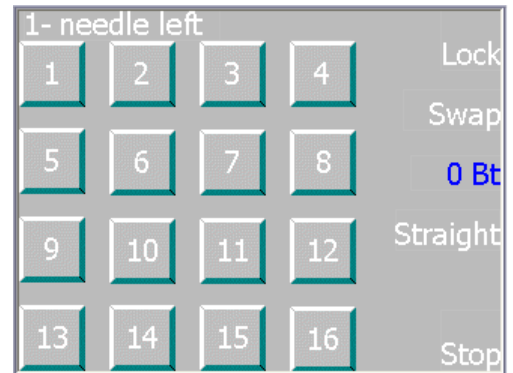
4.5.7 0 Bt (Zero backtack)

Default at the start and end of a seam, the selected backtack on the Efka V820 panel is performed :

- No backtack activated
- Single backtack with n1 stitches
- Double backtack with n1 + n2 stitches.

On top of that the HM820 offers 3 additional types of backtack:

- Cross in place
- Short fwd cross
- Short Rev cross



To activate one of those 3 additional backtack types, the “0 Bt” button should be pressed. The actually activated backtack type depends on the setting made in the setup screen.

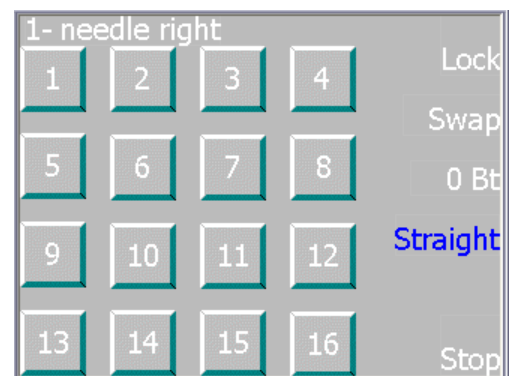
Note: Check & 4.5.3 for a description of these backtack types

Note: Check chapter 4.5 how to select the backtack type

4.5.8 Temporarily switching off a selected pattern

Press the “Straight” button to temporarily switch off the selected decorative stitch pattern. The pattern will be switched off immediately. Only “straight forward” sewing will be performed.

Press again the “Straight” button to activate the decorative stitch pattern again.



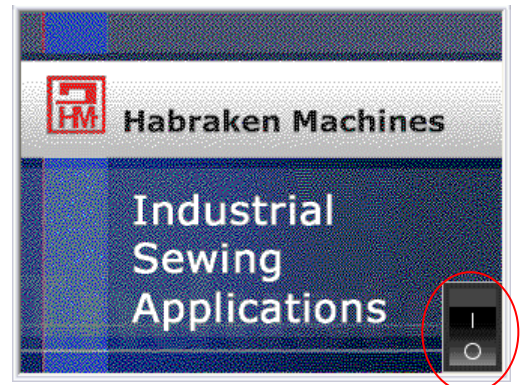
Speed limits stay in effect.



5 Air Supply

To avoid serious damage if decorative stitching is operated with insufficient or no air pressure, the HM820 is equipped with an air pressure sensor.

In case the HM820 is power up with low or no air pressure, the main screen is displayed.
The machine can still be operated for maintenance purpose.



Main screen

As soon as the "1/0" button is pressed to start decorative stitching, an error message "Check Air Supply" is displayed.

Further operation is locked. Only selecting the Main Screen with the "1/0" button is still activated.

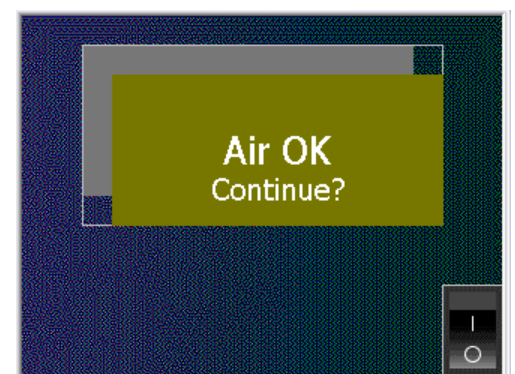


After correction of the air supply, the message "Air OK Continue?" is displayed.

Press the message field to accept and continue to the Configuration Screen.



In case air pressure fails during decorative stitch operation, the machine will lock and the message "Check Air Supply" is displayed.





6 USB tool port

Standard the HM820 is equipped with an USB tool port (just above the 25p machine interface connector).

This port offers the possibility to upload future program changes or user patterns.

The machine will be accompanied with a CD containing software and instructions for uploading new software or user patterns.



7 Operation

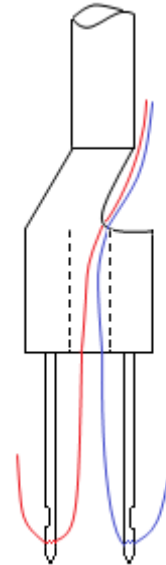
7.1 Threading



Make sure the machine is switched off.

Check &6.1 “Threading the needle thread” and &6.7 “Changing the hook-thread bobbin” of the 867 & 868 Instruction Manual for a detailed explanation of the threading.

Check figure 7.1 for threading the Rotating Needlebar.



Note: It is recommended to use the supplied guiding tool.

7.2 Start-up

Perform a visual inspection of the machine and its environment before use. Make sure air pressure is available. Keep the work area clean and free.

- Power on (§ 2.1 Overview : Efka main switch)
- The display on the Decorative Stitching Control Unit will shortly show the message “Now booting up”
- After the bootup sequence, the main screen is shown



Main screen



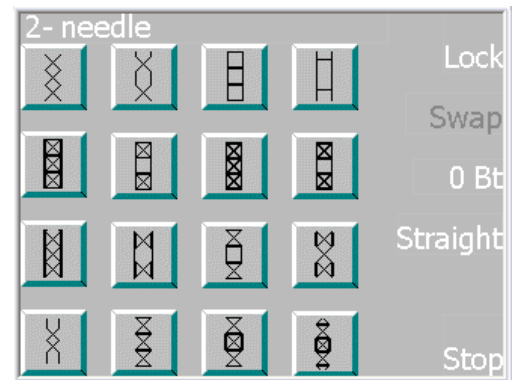
Habraken Machines

- Press the “1/0” button to proceed to the Configuration screen
- Press the Change button to select the appropriate needle set
- Press the Continue button to proceed to the decorative selection screen



Configuration screen

- At this stage the control is ready for operation.
- Pressing the pedal will start decorative stitching with the selected pattern
- Check chapter 4 for a description of the options on the righthand side of the machine.
- To exit the decorative stitching mode, press the STOP button





7.3 Special Efka DA321 parameters

The HM820 mainly uses standard Efka parameter settings for machine classes DA 867 and DA 868. Parameters set differently are listed below.

P 112 = 400	Start backtacking speed
P 113 = 400	End backtacking speed
P 117 = 450	DB2000 max. speed (backtack or 0-stitch active)
P 139 = 1	Speed in display
P 220 = 2	Accelerating power
P 241 = 9	LSP input on A7
P 247 = 26	In8 = DB3000
P 275 = 17	In7 = DB2000
P 289 = 950	DB3000 max. speed (cross-stitch without backtack or 0-stitch)
P 290 = 41	Mode 'machine model'
P 601 = 0	Lift mid-guide during backtack 0 = no, 1 = yes
P 602 = 0	Lift mid-guide during footlift 0 = no, 1 = yes
P 026 = 4	Pedal 60 steps progressive



7.4 Specifications

Electrical system

Type:	Single phase
Voltage:	230VAC 50/60Hz
Power consumption:	0,5kW
Fuse maximum:	16A

Pneumatic system

Operating pressure:	6 +/- 0,5 bar
Air consumption per work cycle:	0,1 NI

Sewing head

Maximum number of stitches:	940 / 450 rmp (Decorative stitching mode, pattern related)
Maximum stitch length:	12 mm
Maximum pressure foot stroke:	7 mm
Clearance under the pressure feet:	
when sewing:	10 mm
when raised:	20 mm
Maximum thread thickness:	10/3 Nm
Through-feed area:	335x 125 mm



Addendum

- DA 867 / DA 868 Instruction manual
- DA 867 / DA 868 Service manual
- Efka DA321 Parameter list
- FP-0 R PLC software